

BHI-01001
Rev. 0

Site Specific Health and Safety Plan for Drilling in Support of In Situ Redox Manipulation



Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
Waste Management

Bechtel Hanford, Inc.
Richland, Washington

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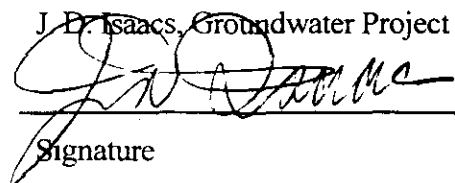
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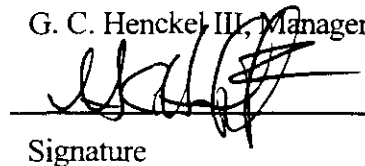
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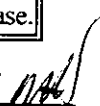
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Author
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Date Published
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SITE SPECIFIC HEALTH AND SAFETY PLAN

Project Name/Description:

Drilling in support of the In Situ Redox Manipulation in the 100-HR-3 Operable Unit. Approximately 8 wells will be drilled in the 100-D/DR Area utilizing air rotary, sonic, or cable tool drilling methods. Split spoon sampling will be done in conjunction with the drilling. The drilling may be spread out over several months.

Location:

☒ 100 ☐ 300 ☐ 600 ☐ 1100
☐ 200 ☐ 400 ☐ 700 ☐ 3000

Facility Name/Number:

Boreholes will be located in the 100-D area near 199-D4-1 well.

Objective of Project:

- | | | |
|--|--|--|
| <input type="checkbox"/> ERA | <input type="checkbox"/> Drum Sampling | <input checked="" type="checkbox"/> Drilling |
| <input type="checkbox"/> RIFS Characterization | <input type="checkbox"/> Sampling Soils | <input type="checkbox"/> UST Removal |
| <input type="checkbox"/> RCRA | <input type="checkbox"/> Soil Removal | <input type="checkbox"/> Treatability Test |
| <input type="checkbox"/> Scoping Study | <input type="checkbox"/> Soil Gas Sampling | <input type="checkbox"/> |
| <input type="checkbox"/> Reconnaissance | <input type="checkbox"/> Remediation | <input type="checkbox"/> |
| <input type="checkbox"/> Spill Response | <input type="checkbox"/> GW Sample | <input type="checkbox"/> |

Site Description/History/Disposal Practices:

The 100-HR-3 operable unit encompasses groundwater contamination underlying the 100-D and 100-H areas. The primary contaminant is Chromium VI. The sources of chromium contamination resulted from the use of sodium dichromate during past reactor operations. Sodium dichromate was used for rust and corrosion control during reactor operations. Samples collected from groundwater in the immediate vicinity of the planned wells shows a maximum concentration of 1 ppm Cr VI.

The drilling subcontractor will prepare a hazard analysis, job safety analysis, or equivalent covering the hazards and control measures for their specific equipment and operations.

SITE SPECIFIC HEALTH AND SAFETY PLAN

WASTE TYPES, WASTE CHARACTERISTICS, AND HAZARD CONCERNS

Waste Types: ☒ Liquid ☐ Solid ☐ Gas ☐ Unknown ☐ Other Specify:

Waste Characteristics:

<input checked="" type="checkbox"/> Chemical	<input type="checkbox"/> Biological	<input type="checkbox"/> Radioactive (see RWP No.)
<input type="checkbox"/> Corrosive	<input type="checkbox"/> Flammable	<input type="checkbox"/> Unknown
<input checked="" type="checkbox"/> Toxic	<input type="checkbox"/> Volatile	<input type="checkbox"/> Other <i>specify</i> :
<input type="checkbox"/> Inert	<input type="checkbox"/> Reactive	<input type="checkbox"/>

Hazards of Concern:

<input checked="" type="checkbox"/> Temperature Extremes	<input checked="" type="checkbox"/> Noise	<input checked="" type="checkbox"/> Compressed Air
<input checked="" type="checkbox"/> Fire Hazards	<input checked="" type="checkbox"/> Electrical	
<input type="checkbox"/> Unusual Conditions	<input checked="" type="checkbox"/> Lifting	
<input checked="" type="checkbox"/> Remote Work Area	<input checked="" type="checkbox"/> Sanitation	
<input checked="" type="checkbox"/> Hazard Communications	<input checked="" type="checkbox"/> Fall Protection	
<input checked="" type="checkbox"/> Pinch Points	<input checked="" type="checkbox"/> Biological	
<input checked="" type="checkbox"/> Overhead Hazards	<input checked="" type="checkbox"/> Walking/Working Surfaces	

OVERALL HAZARD CLASSIFICATION: ☐ High ☐ Medium ☐ Low ☒ Negligible ☐ Unknown

JUSTIFICATION: Chromium is present in groundwater in concentrations which present negligible health risk to site personnel. The primary route of exposure is ingestion of groundwater. An individual would have to deliberately consume significant amounts of water to suffer any acute symptoms. Inhalation, ingestion, and skin absorption are not credible exposure risks relative to this task.

SITE SPECIFIC HEALTH AND SAFETY PLAN CHECK LIST

TEMPERATURE EXTREMES Monitor work periodically. Adjust work/rest regimen according to WBGT. Minimize maximize clothing where possible. Drink cool/warm liquids as appropriate. Discuss signs/symptoms of heat/cold stress. NOTE: Temperature extremes are related to seasonal climatic changes. Any introduced temperature extremes require SSO evaluation and approval		REMOTE WORK AREA Know your location. Communication available - phone/radio First aid kit and trained personnel Know emergency numbers (see page 10) Use buddy system when required by supervision.
PERMITS _ Confined Space Permit. <input checked="" type="checkbox"/> Hot Work Permit if necessary. _ Radiation Work Permit. <input checked="" type="checkbox"/> Excavation Permit.	COMPRESSED AIR All hoses and components proper pressure rating. PRV in place and tested. System in good condition.	HAZARD COMMUNICATIONS MSDS file in place and current. Containers labeled and properly stored. Workers apprised of new chemical hazards.
PINCH POINTS Assure guards in place. Brief site personnel on location of potential pinch points. Identify or post areas where guarding is not appropriate or feasible.	ELECTRICAL GFCI in outdoor/wet locations. Tools and cords in good condition. Cords protected. Lock and Tag as required.	NOISE/FALL PROTECTION Hearing protection worn where required. Hearing protection available. Use full body harness and approved anchorage when working above 6'.
WALKING/WORKING SURFACES Carry out daily housekeeping efforts. Keep walkways/work areas clear. Designate walkways/routes where appropriate. Flag or post problem areas where necessary.	SANITATION Portable toilet on site. Potable water/cups on site. Wash water and soap on site. Eating/smoking in designated areas only. Empty trash and waste food receptacles daily.	LIFTING Use proper lifting techniques. Use buddy system for awkward/heavy loads. Use mechanical lifting devices as appropriate.
OVERHEAD HAZARDS Never go under a suspended load at any time. Use tag lines to handle loads. Secure loose objects overhead. Wear head protection when in work zone.	FIRE HAZARDS Flammable liquids stored properly. Combustible materials accumulation kept to minimum. Heaters approved type/installed properly. Fire extinguisher in place/proper type. Ignition sources eliminated or protected.	OTHER -

SITE SPECIFIC HEALTH AND SAFETY PLAN

KNOWN CONTAMINANTS

KNOWN CONTAMINANTS	PEL/TLV (ppm or mg/m ³)	IDLH (ppm or mg/m ³)	WARNING PROPERTIES/CONCENTRATION (ppm or mg/m ³)	1. TARGET ORGANS 2. EXPOSURE SYMPTOMS	IMMEDIATE FIRST AID MEASURES
Chromium VI	.05 mg/m ³	N/A	N/A	GI Tract, Lungs and Skin irritant in high concentrations. May be detected via urine.	Wash with soap and water.
<div> <div> NA = Not Available U = Unknown NE = Non Established N/A = Not Applicable WARNING PROPERTIES A = Odor B = Visual C = Irritant </div> <div> TARGET ORGANS L = Liver K = Kidney LS = Lungs E = Eyes S/A = Skin Absorption CNS = Central Nervous System R = Respiratory System CA = Carcinogen H = Hemopoietic (Blood) O = Other </div> <div> EXPOSURE SYMPTOMS D = Dizziness I = Skin/Eye/Respiratory Irritant C = Confusion F = Fatigue H = Headache CD = CNS Depression N = Nausea W = Weakness V = Vomiting O = Other </div> <div> 1ST AID MEASURES IrW = Irrigate with (H₂O) FA = Get to Fresh Air MA = Medical Aid IS = Wash Soap and Water </div> </div>					

SITE SPECIFIC HEALTH AND SAFETY PLAN
KEY PERSONNEL, JOB TITLE, AND TRAINING REQUIREMENTS

Job Title and/or Name	Training Requirements	Misc. Information
Field Superintendent/Safety Rep.,	A, B, D, E, F, I, L, Q.	Note: Noise control is covered in HGET
Drilling Crew	A, B, D, F, I, L, Q. G if they work above 6'.	
Samplers/ Geologist	A, B, D, F, L, Q.,	
Visitors	Q and R	
NOTE: This site is thoroughly characterized in terms of contamination, therefore a minimum of 24 hr haz waste is required.		

List the letter(s) of training requirements (classes) required for individuals(s) named above.

A. HGET	G. Fall Protection	M. Bioassay
B. 24 hr Haz. Waste	H. SCBA	N. Whole Body Count
C. Rad. Worker Training	I. First Aid/CPR	O. Chest Count
D. 1 Day OJT	J. Noise Control	P. Asbestos Worker
E. 8 Hr. Supervisor	K. Mask Fit	Q. Read Safety Plan
F. 8 Hr. Refresher	L. Haz. Waste Worker Medical Exam	R. Escorted

SITE SPECIFIC HEALTH AND SAFETY PLAN DECONTAMINATION PROCEDURES

Personnel Decontamination	Sampling Equipment Decontamination	Heavy Equipment Decontamination
Wash hands prior to eating lunch and at end of shift. Chromium levels in groundwater are not a health risk to personnel from skin contact.	Sampling equipment decontamination will be per BHI-EE-01. 6.2.	Decontamination of drilling equipment will be carried out per BHI-EE-01. 6.2.

EQUIPMENT REQUIREMENTS CHECKLIST (Underline required items or add others)

- | | | | |
|-----------------------------|---------------------------|------------------------------|-----|
| 1. <u>First Aid Kit</u> | 6. <u>Signs</u> | 11. <u>Spill containment</u> | 16. |
| 2. <u>PPE</u> | 7. <u>Decon Equipment</u> | 12. <u>Chemical Toilet</u> | 17. |
| 3. <u>Fire Extinguisher</u> | 8. <u>Radio or Phone</u> | 13. | 18. |
| 4. Eye Wash | 9. Breathing Air | 14. | 19. |
| 5. Wind Indicator | 10. Signal Device | 15. | 20. |

SITE SPECIFIC SAFETY HEALTH AND SAFETY PLAN PERSONAL PROTECTIVE EQUIPMENT		
Job Task	Work Zone/Location	PPE Level
Drilling	Control Zone	Level "D"
Sampling	Control Zone	Level "D"
Decontamination	Control Zone	Level "D"
No monitoring is required for this project.		Level "D" Hard Hat Safety glasses w/side shields Substantial footwear for ERC personnel Steel toed boots for drill crew
		Level "C" N/A
		Level "B" N/A

<p style="text-align: center;">SITE SPECIFIC SAFETY HEALTH AND SAFETY PLAN SITE ACCESS AND WORK ZONES</p>
<p>1. Support Zone The area outside of the roped boundary for trailer, vehicles, etc..</p>
<p>2. Contamination Reduction Zone Area where decontamination of drilling and/or sampling equipment takes place per Site Superintendent.</p>
<p>3. Control Zone All areas within the roped boundary around the drilling rig and equipment.</p>
<p>A site map is not necessary for this project.</p>
<p>A First Aid Kit is located in the site trailer and/or in the drill crews vehicle. Fire Extinguisher is located on the drill rig.</p>

SITE SPECIFIC HEALTH AND SAFETY PLAN **EMERGENCY PROCEDURES**

CONTINGENCY PLANS

FIRE

Contact HFD immediately: 911 (landline) or 373-3800 cellular
 Fire Extinguishers are available.
 Notify Field Superintendent and Safety Rep A.S.A.P.

PERSONAL INJURY

First Aid (Minor Injury)- Report to HEHF Medical Aid Facility.
 Life Threatening- Call Ambulance 373-3800
 Call Safety Rep A.S.A.P.

CHEMICAL EXPOSURE

Decon affected person, notify Field Superintendent of all potential
 exposures. Report to the appropriate first aid station.

EMERGENCY CONTACTS

NAME

PHONE

All Emergencies: 911/373-3800

Field Superintendent: Randy Havenor 531-0713

Manager, Field Support Safety: Mike Kenter 373-9733/531-0725

Site Safety Rep.: Bruce Tuttle 373-7647/531-0622

OU Team Lead: Tony Knepp 372-9189

100-D Facility Landlord: Bob Deatherage 373-9152

Health Physics: Steve Demers 531-0697

Occurrence Notification: Tim Quinn 372-9257

Notify Site Safety Officer and contact the appropriate personnel
 (SPOC) from posted list.

SPILL CONTROL PLAN

Contacts: Joe Zoric 373-4315; Pager 85-7815
 Then Notify Safety Rep

Containment Kit Located: Support zone

Other Equipment: None

Actions to Take:

Try to contain spill using appropriate PPE. Contact Joe Zoric for
 further instructions.

MEDICAL FACILITIES

LOCATION

PHONE

HEHF MEDICAL AID STATION 1115N 373-1695

HEHF MEDICAL AID STATION 200E 373-2314

KADLEC MEDICAL CENTER 946-4611

Actions to Take:

If site workers experience any unusual symptoms call Field
 Superintendent. If injury is serious call 373-3800 and give location.
 Provide first aid as needed.

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